

WILL GAO

Seattle, WA | (206) 513-8085 | wgaostudio@gmail.com | LinkedIn | GitHub | Website

EDUCATION

University of Washington

Sept. 2023 – June 2027

B.S. Computer Science & Mathematics; GPA: 3.87/4.00

Seattle, WA

- **Available June 2027 – Aug. 2028 for a 12-month position:** admitted to the UW CSE Fifth Year Master's Program, enrollment deferred to Sept. 2028
- **Coursework:** *Graduate* — Randomized Algorithms, Complexity Theory, Social Reinforcement Learning*, Quantum Computing*; *Undergraduate* — Advanced Machine Learning, Stochastic Calculus, Linear Programming (*in progress)

RESEARCH

Compact Encodings for Quantum and Analog Optimization Hardware

Jan. 2026 – Present

UW CSE — Advised by Prof. Jerry Li

Seattle, WA

- Reduced the qubits required to encode sparse-graph instances from $\Theta(n^2)$ to $O(n \log n)$ using edge-indexed formulations, eliminating higher-order terms via Rosenberg quadratization
- Designed and proved exact encodings mapping nine classic hard optimization problems — including traveling salesman, Steiner tree, and feedback vertex set — onto quantum annealers and analog Ising machines
- Benchmarking the encodings in collaboration with Prof. Sara Achour's group at Stanford; manuscript in preparation

Opinion Dynamics on Growing Social Networks

June 2025 – Aug. 2025

UW Mathematics — Advised by Prof. Soumik Pal

Seattle, WA

- Modeled opinion evolution on a growing social network as a Markov chain under four recommendation algorithms: popularity, homophily, community-based, and random friend-of-a-friend
- Showed that popularity-based recommendation drove opinion dominance, while homophily produced structural segregation *without* corresponding opinion polarization
- Built an interactive [D3.js simulation](#) visualizing network evolution and polarization metrics in real time

EXPERIENCE

Applied Scientist Intern

June 2026 – Present

Madrona Venture Group

Seattle, WA

- Own the modeling and data pipeline behind an internal research system that scores a 10M+ population of technical operators on their likelihood of starting a company
- Trained, benchmarked, and ensembled tabular, temporal graph network, and LoRA-fine-tuned LLM predictors, reaching $\sim 100\times$ lift over base rate on backtest
- Designed agentic due-diligence tooling that vets model-surfaced candidates; ran reviews with investors and folded their judgment back into the system
- Shipped an agentic paper-intelligence system investors use weekly to assess the commercial potential of academic work and source deep-tech opportunities

Teaching Assistant

Sept. 2026 – Dec. 2026

University of Washington — CSE 422 (Advanced Toolkit for Modern Algorithms)

Seattle, WA

Co-Founder

Sept. 2025 – Apr. 2026

Solid Outfit

Seattle, WA

- Launched an AI styling and recommendation product end to end, from model training through production web app and early user testing

PROJECTS & AWARDS

UW Lean Hackathon — Honorable Mention | [GitHub](#)

May 2026

- Developed a Chrome extension for Overleaf that runs Lean proof checking inline, verifying mathematical statements as authors draft

DubHacks 2025 — Atlassian Track Winner | [Devpost](#)

Oct. 2025

- Created a Jira plugin generating interactive semantic dependency graphs from GitHub repositories using Atlassian Forge and Rovo Agents

TECHNICAL SKILLS

Languages: Python, TypeScript, Java, C, SQL | **ML/Data:** PyTorch, scikit-learn, Snowflake, LoRA/PEFT fine-tuning | **Web/Infra:** React, Next.js, PostgreSQL, Docker, AWS, Modal | **Research:** Lean, Macaulay2, $\text{\LaTeX}$